UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,294	11/10/2003	William Silver	C97-050 CON3	5085

23459 7590 03/21/2006		EXAMINER
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ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 November 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *122-157* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *122-125,130,131,134,135,142,144 and 146-157* is/are rejected.

7)☒ Claim(s) *126-129,132,133,136-141,143,145 and 154* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/10/2003*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Specification

1.   In page 2 of the preliminary amendment to the specification filed November 10, 2003,

under the heading Cross Reference to Related Applications", U.S. Patent Application Serial

Number 09/979,588 is not a correct Application number. Appropriate correction is required.

Original Claims

2.   While applicants have canceled claims 1-120 of the originally filed claims by the

preliminary amendment (See page 1 of the amendment), and have submitted newly added claims

121-156 (See pages 1-4 of the amendment), the originally filed claims in fact contain claims 1-

121. Applicant should cancel originally filed claims 1-121.

Claim Objections

3.   The numbering of claims is not in accordance with 37 CFR 1.126 which requires the

original numbering of the claims to be preserved throughout the prosecution. When claims are

canceled, the remaining claims must not be renumbered. When new claims are presented, they

must be numbered consecutively beginning with the number next following the highest

numbered claims previously presented (whether entered or not).

       Misnumbered claims 121-156 have been renumbered 122-157.

4.   Claims 126-127 directly or indirectly depends on claim 122. Claims 125-126 are not

examined because of the impermissible dependency recited in claim 125. Claim 125 is objected

to because it depends on itself. A claim that depends on itself is not permissible. Dependent

claim 125 should refer to a preceding claim. Appropriate correction is required.

5.   Claim 154 is objected to because of the following informalities: the claim does not end

with a period. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

7.   Independent claim 147 is rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. Claim 146 recites the limitation ". . . providing additional

information at respective additional positions within the region of the image that includes the

boundary points." Which is unclear. How does an ordinary artisan generates additional

information (which is a generic term) without first having some known information to start with?

Unless applicant is interpreting the chain of boundary points as such, and if so applicant should

be using the same to be clear and consistent.

        Since claims 148-157 directly or indirectly depend on claim 147, they are also rejected

under 35 USC 112, second paragraph, for the same reason set forth above for claim 147.

Claim Rejections - 35 USC § 102

8.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on
> sale in this country, more than one year prior to the date of application for patent in the United States.

9.   Claims 122-125 and 134 are rejected under 35 U.S.C. 102(b) as being anticipate by Gee,

et al. (5,459,636).

With regard to claim 122, Gee, et al. discloses a method of training a model pattern for use in geometric pattern matching (See for example, col. 1, lines 40-50), the method comprising: obtaining a digital image of an object (See for example, col. 4, lines 2-16); detecting boundary points, i.e., edge/contour points, in the digital image (See for example, col. 4, lines 11-16, and 36-43); generating information, i.e., minimum distance vector, about the boundary points for inclusion in said model pattern, the information being stored as a function of position within a region of the image that includes the boundary points (in Gee, et al. a minimum distance vector is applied to a neural network that is adapted to estimate translation, rotation, and scaling adjustments that are to be made to the model data. Outputs of the neural network are applied to position and orientation adjustment module that adjusts the position of the model data relative to the edge data of the target object (See for example, col. 4, lines 16-28. Additionally, applicant's attention is invited to lines 13-33).

With regard to claim 123, the method of claim 122, wherein the information is stored as a function of real-valued position within the region of the image that includes the boundary points (See for example, col.5, lines 17-47).

With regard to claim 124, the method of claim 122, wherein the information is stored at discrete points on a grid using a two-dimensional array, i.e., x and y component of the vectors (See col. 4, line 37 – col. 5, line 47).

With regard to claim 125, the method of claim 122, wherein generating information about the boundary points results in information that is a vector-valued function, i.e., minimum distance vector, position within the region of the image that includes the boundary points (See for example, Figs. 3-5).

With regard to claim 134, the method of claim 122, wherein generating information about

the boundary points includes: determine neighboring boundary points for each boundary point

(to determine the minimum distance vector (discussed above in claim 122) between points would

inherently require the determination of neighboring boundary points for each boundary point).

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

11.   Claims 130-131, 135, 142, 144 and 146 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gee, et al. (5,459,636) in view of Irie, et al. (5,555,320).

With regard to claim 135, Gee, et al. discloses all of the claimed subject matter as already

discussed above in claim 134, and the arguments are not repeated herein, but are incorporated by

reference. Gee, et al. does not expressly call for connecting neighboring boundary points to

provide at least one chain of boundary points. However, Irie, et al. (See Fig. 4, where the moon

shaped region is enclosed by chain of boundary points) teaches this feature. Therefore, it would

have been obvious to one having ordinary skill in the art to incorporate the teaching as taught by

Irie, et al into the system of Gee, et al, and to do so would at least improve the recognition

process, and minimizes the processing time.

With regard to claim 130, the method of claim 122, wherein generating the information

about the boundary points includes a sequence of propagation events, each propagation event

providing additional information at respective additional positions within the region of the image

that includes the boundary points (See the event shown from Fig. 4 into Fig. 5, where the

distribution "D" is transformed into "D1" of Irie, et al; and Figs. 3-5 of Gee, et al).

With regard to claim 131, the method of claim 129, wherein positions within the region of

the image that includes the boundary points are initialized to a pre-defined value before the

sequence of propagation events (Which reads on the distribution "D" of Irie, et al).

With regard to claim 142, the method of claim 135, wherein generating information about

the boundary points includes: using at least one chain of boundary points to carry out at least one

propagation event, each propagation event providing additional information at respective

additional positions within the region of the image that includes the boundary points (See Figs.

3-5 of Gee, et al.; and Figs. 4-5 of Irie, et al) .

With regard to claim 144, the method of claim 135, wherein each propagation event

provides a plurality of vectors, each vector indicating a distance and direction toward a pattern

boundary that includes a plurality of pattern boundary points (See for example, Fig. 4 of Irie, et

al.; and Figs. 4-5 of Gee, et al).

With regard to claim 146, the method of claim 142, wherein the number of propagation

events is determined by a parameter, i.e., feature vector distribution "D" (See Fig. 4 of Irie, et al).

12.   Claims 147-148 and 155 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Irie, et al. (5,555,320).

With regard to claim 147, Irie, et al. discloses a method of training a model pattern for use

in geometric pattern matching (See Figure 1), the method comprising: obtaining a digital image

of an object (See for example, item 1, in Figure 1); detecting boundary points in the digital image

(which corresponds to feature extraction (3) in Fig. 1; and the feature vector distribution shown

in Fig. 4, where each point corresponds to a feature vector on the contour/boundary of the

crescent shape); connecting the boundary points to provide at least one chain of boundary points

(the points shown around the boundary of the crescent shaped image, are in fact connected to

provide the moon shaped region generated by connecting the points that encloses the image

"LO", as shown in Fig. 4); using at least one chain of boundary points to carry out at least one

propagation event, each propagation event providing additional information at respective

additional positions within the region of the image that includes the boundary points (which

corresponds to the transformation of the crescent distribution of points "D" of Fig. 4, into a

transformed distribution "D1" shown in Fig. 5). Although Irie, et al. does not expressly identify

the distribution shown in Fig. 4 using a specific language "boundary points" it would have been

obvious to one having ordinary skill in the art to interpret the feature vector distribution

represented by point features shown in Fig. 4 as points that are distributed along the crescent

shaped image to literally mean boundary points.

With regard to claim 148, the method of claim 147, wherein connecting the boundary

points includes: identifying neighboring boundary points for each boundary point (See for

example, Figs. 4-5).

With regard to claim 155, the method of claim 147, wherein each propagation event

provides a plurality of vectors, each vector indicating a distance and direction toward a pattern

boundary that includes a plurality of pattern boundary points (See for example, Fig. 4).

Allowable Subject Matter

13.   Claims 128-129, 132-133, 136-141, 143, and 145 are objected to as being dependent

upon a rejected base claim, but would be allowable if rewritten in independent form including all

of the limitations of the base claim and any intervening claims.

Conclusion

14.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. US Patent Numbers: **5,796,868 and 5,912,985**.

15.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to DANIEL G. MARIAM whose telephone number is 571-272-

7394. The examiner can normally be reached on M-F (7:00-4:30) FIRST FRIDAY OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, MATTHEW BELLA can be reached on 571-272-7778. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DANIEL G MARIAM
Primary Examiner
Art Unit 2625

March 20, 2006